Service Manual

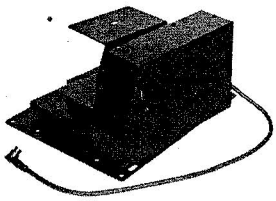
Remote Controller — Pan/Tilt Unit

WG-CR100E WG-PT100E

Back Electret Condenser Microphone

WG-M100E

WG-CR100E



WG-PT100E

WG-M100E

SPECIFICATIONS

■ WG-CR100E Remote Controller

Type:	Back electret condenser microphone
Directivity:	Unidirectional
Sensitivity:	–20 dB ±3 dB (0 dB = 1V/Pa, 1 kHz)
Output Impedance:	2 kohms (Balanced)
Frequency Responce:	100 Hz - 10 kHz
Inherent Noise:	Less than 30 dB SPL
Maximum Sound Pressure Level:	More than 110 dB SPL
Power Supply:	+12 VDC - +15 VDC 4 mA
Ambient Operating Temperature:	0°C - +40°C (32°F - 104°F)
Microphone Cable:	ø5 mm, 4-pin shield wire (dark gray)
Microphone Cable Length:	Approx. 7-7/8" (2M)
Dimensions:	96 (W) x 34 (H) x 138 (D) 3-3/4" (W) x 1-5/16" (H) x 5-7/16" (D)
Weight:	160g (0.352lbs.)

STANDARD ACCESSORIES

Microphone Cable ..... 1 pc.

■ WG-PT100E Pan/Tilt Unit

Power :	+12V DC, 0.6A (Provided from WG-AV120/G)
Panning Angle :	40 degrees each for right and left
Panning Speed :	7.5° / sec (15°/sec at preset mode)
Tilting Angle :	+18 degrees (upper), –20 degrees (lower)
Tilting Speed :	7.5° / sec (15°/sec at preset mode)
Accuracy of Preset Movement :	Approx. ±0.5 degrees
Ambient Operating Temperature :	+5°C - +35°C (41°F - 95°F)
Dimensions :	200 (W) x 133.5 (H) x 243 (D) mm 7-7/8"(W) x 5-2/8" (H) x 9-9/16" (D)
Weight :	2.8kg (6.16 lbs.)

STANDARD ACCESSORIES

Camera Power Cable ..... 1 pc.
Camera Mounting Screw ..... 1 pc.
Screws (M4 x 8) ..... 4 pcs.

Panasonic

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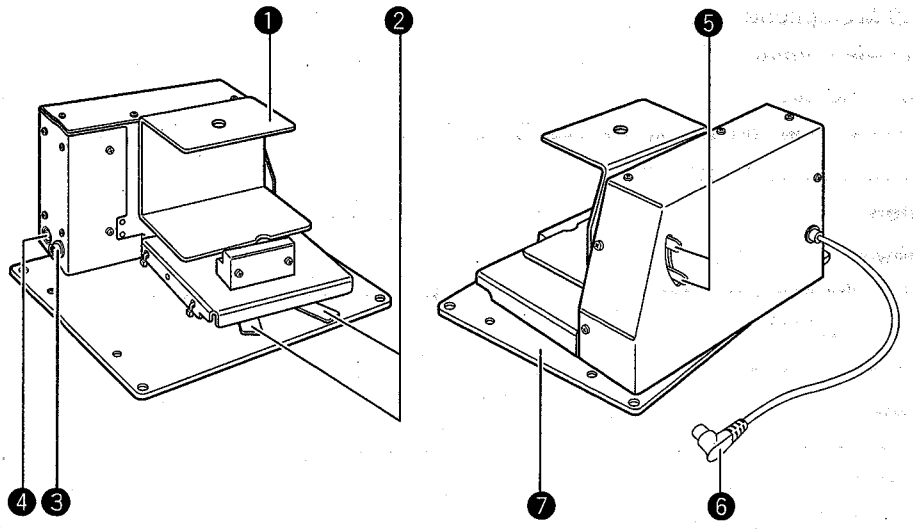
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS

■ WG-PT100E Pan/Tilt Unit



1. Camera Mounting Bracket
The Colour Video Camera WG-V100E can be installed into this bracket with camera mounting screw (supplied).

2. Panning Limit Levers
The panning angle can be adjusted by changing the position of these levers.
Notes :
1. The maximum panning angle : 40 degrees (right), 40 degrees (left)
2. The panning angle has been set to 20 degrees each for both right and left at the factory.

3. DC Power Output Connector
+12V DC Power is provided from this connector to Colour Video Camera WG-V100.

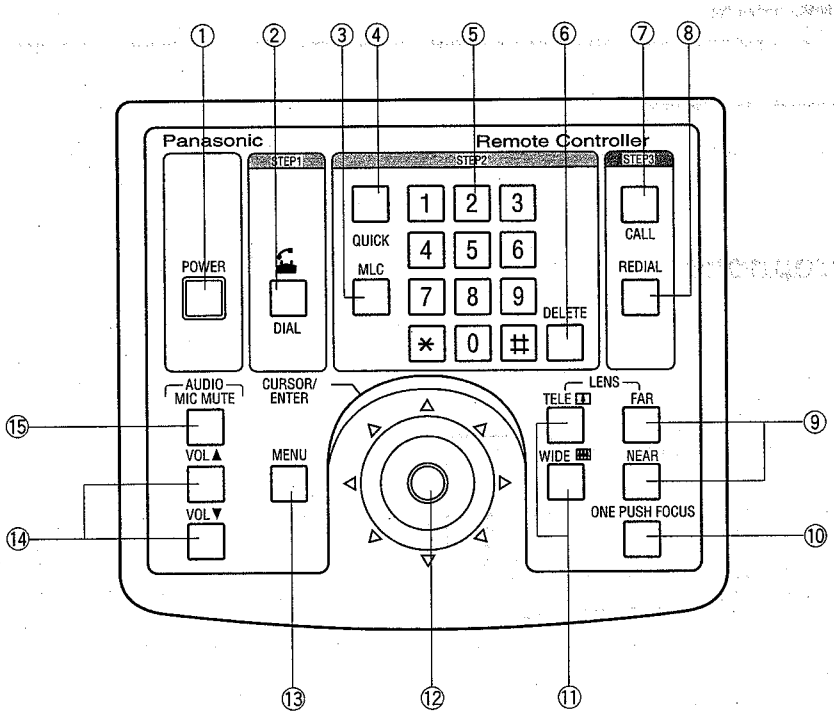
4. External DC Input Connector
+12V DC is supplied from AV Codec WG-AV120 to this connector.

5. Tilting Limit Levers
The tilting angle can be adjusted by changing the position of these levers.
Notes :
1. The maximum tilting angle : +18 degrees (upper), –20 degrees (lower).
2. The tilting angle has been set to +5 degrees (upper) and –15 degrees (lower) at the factory.

6. Pan/Tilt Control Cable
Connect this cable to the lens connector on the X10 power zoom lens mounted on WG-V100.

7. Mounting Base
The Pan/Tilt unit is mounted on the Panasonic cabinet by tightening 4 screws (supplied).

■ WG-CR100E Remote Controller



1. **Power Key (POWER)**
   This switch is used to turn the systems power on or off except the WG-AV120 AV Codec.

2. **Dial Key (DIAL)**
   This key is used to make a connection with the destination site.

3. **Multi Location Conference Key (MLC)**
   This key is used to transmit the video and audio to the other three locations simultaneously from the local site.

4. **Quick Dial Key (QUICK)**
   This key is used to select Short Dial No. registered in the menu.

5. **Numeric Key (0 - 9, * #)**
   These keys are used for numeric input into the system such as telephone number, camera preset position, etc.

6. **Delete Key (DELETE)**
   This key is used to correct any numeric or alphabetic input in the menu.
   Press this key to delete the character positioned immediately to the left of the cursor.

7. **Call Key (CALL)**
   This key is used to call up the destination site.

8. **Redial Key (REDIAL)**
   This key is used to call up the destination site automatically called last time.

9. **Focus Key (LENS FAR/NEAR)**
   These keys are used to adjust lens focus of specified lens mounted on the camera.

10. **One Push Focus Key (ONE PUSH FOCUS)**
    This key is used to adjust lens focus automatically.

11. **Zoom Key (LENS TELE/WIDE)**
    These keys are used to adjust lens zoom of specified lens mounted on the camera.

12. **Joystick Controller (CURSOR / ENTER)**
    This Joystick is used to operate the Pan/Tilt Unit manually, or move the pointer (arrow) to the desired position on the menu. Also this Joystick is used to execute the currently high-lighted setting on the menu.

13. **Menu Key (MENU)**
    This key is used to display the menu on the monitor screen.

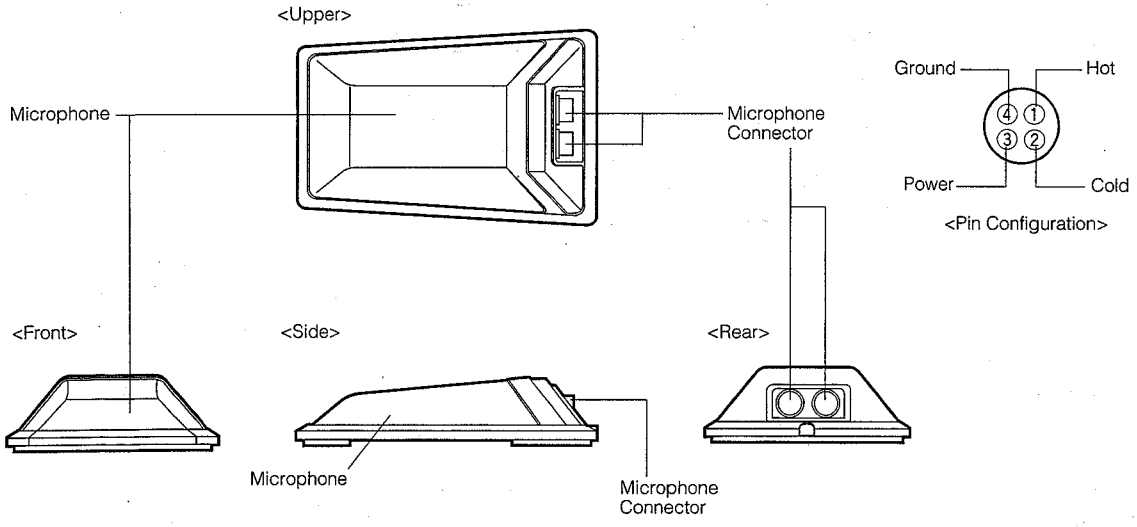
14. Volume Key (VOL ▼▲)

These keys are used to control audio level of the room speaker.
The audio level increases while the (▲) key is pressed, or decreases while the (▼) key is pressed.

15. Microphone Mute Key (MIC MUTE)

This key is used to mute the outgoing sound from the local site. When this key is pressed, a mark of ⊗ is displayed on the monitor screen.
Press this key again to release the function.

■ WG-M100E Microphone



■ Transmit Data Format (according to MIS X-0005)

- The configration of the Transmit Data is as shown in Fig. 1.
  Transmit sequencial starts from the LSB first, the Maker Code should be transmitted as 2-Byte unit and the other Data should be transmitted as 1-Byte unit.
- The Data format of the continuous transmit, the same frame should be repeated from the Leader to theTrailer.

Leader	Maker Code	Maker Code Parity	Machine Code		Data Code	Machine Data Code Parity	Trailer
			System Bit	Machine Bit			
	2-Byte	4-Bit	4-Bit	8-Bit	1-Byte	1-Byte	

Fig. 1

1) Leader — Marker which indicated the header of the Transmit Data.

2) Maker Code — Maker Code should be 2002 (Hex).

MSB												LSB
0	0	1	0	0	0	0	0	0	0	0	0	1	0

3) Maker Code Parity — Maker Code Parity should be "0000" .

4) Machine Code — System Bit should be indicated as follow:

MSB			LSB	
0	0	0	0	(0H)

Machine Bit should be indicated as follow:

MSB							LSB	
0	1	0	1	0	1	0	1	(55H)

5) Data Code — Indicated Code of each Key by 1-Byte.

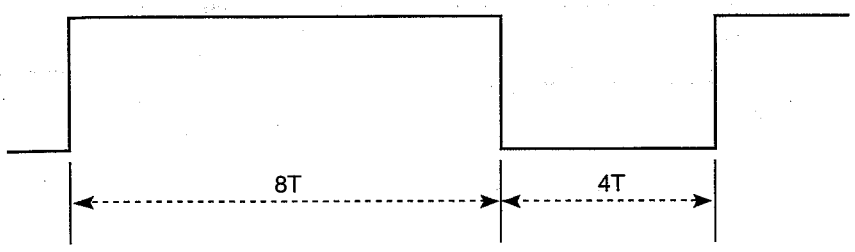
6) Machine • Data Code Parity — Exclusive OR output of Maker Code Parity + Machine Code + Data Code divided by each 8-Bit.

7) Trailer — Marker which indicated the end of the Transmit Data.

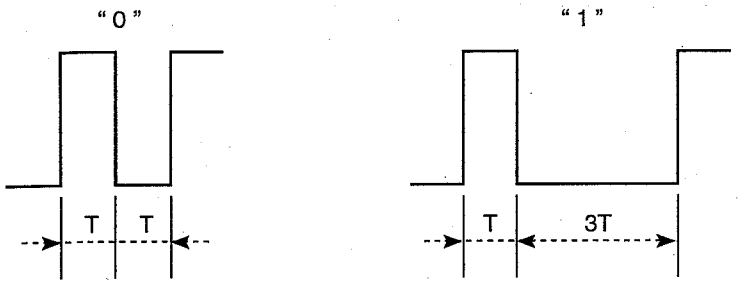
■ Structure of Signal

- The structure of the signals are as follows.
  Fundamental pulse width (T) should be 436 ns ± 3%.

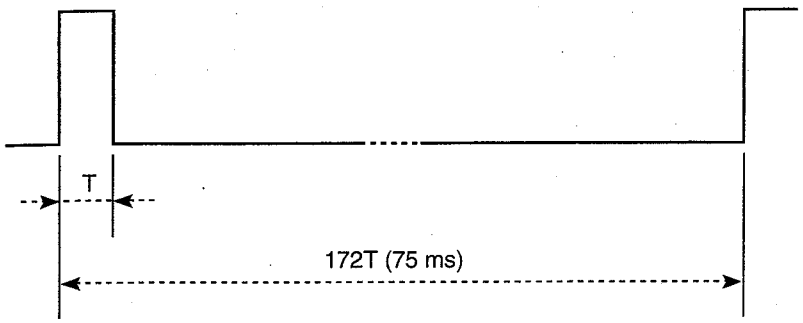
1) Leader Section



2) Bit of each Code Section and Parity



3) Trailer Section



■ Table of Data Code and Machine • Data Code Parity

• The Data Code and Machine • Data Code are as shown in Table 1.

Switch Description		Data Code (Hex)	Machine • Data Code (Hex)	Remarks
POWER		07	52	
AUDIO	MIC MUTE	16	43	
	VOLUME ▲	22	77	
	VOLUME ▼	23	76	
DIAL	DIAL	06	53	
	QUICK	05	50	
	CALL	00	55	
	MLC	0F	5A	
	REDIAL	10	45	
	NUMERIC KEY 0	14	41	
	NUMERIC KEY 1	04	51	
	NUMERIC KEY 2	03	56	
	NUMERIC KEY 3	02	57	
	NUMERIC KEY 4	0B	5E	
	NUMERIC KEY 5	0A	5F	
	NUMERIC KEY 6	09	5C	
	NUMERIC KEY 7	0E	5B	
	NUMERIC KEY 8	0D	58	
	NUMERIC KEY 9	0C	59	
	*	15	40	
	#	13	46	
OPERATION	MENU	27	72	
	ENTER	17	42	
	DELETE	12	47	
	LENS TELE	25	70	
	LENS WIDE	24	71	
	ONE PUSH FOCUS	26	73	
	LENS FAR	20	75	
	LENS NEAR	21	74	
	CURSOR ↑	1B	4E	
	CURSOR ↓	19	4C	
	CURSOR ←	1A	4F	
	CURSOR →	18	4D	
	CURSOR ↖	1D	48	
	CURSOR ↗	1E	4B	
	CURSOR ↙	1C	49	
	CURSOR ↘	1F	4A	

Table 1

■ The transmit Data Code of each key is shown in Fig. 2.

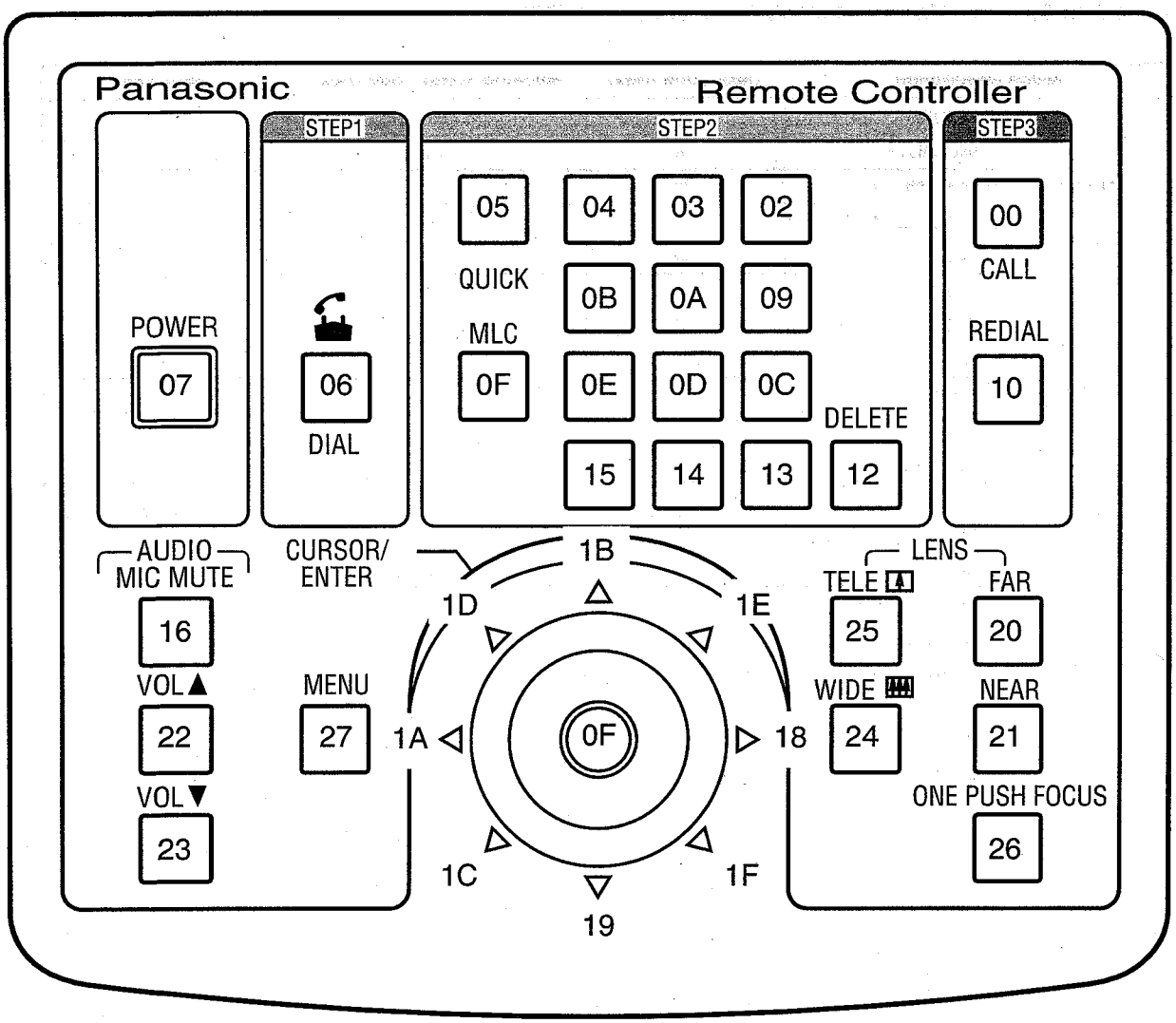
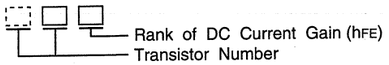


Fig. 2

CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical number and two alphabet letters.



Transistor Number

(Chip Transistor)

Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1A	2SB799
E	2SA1022	1B	2SB814
F	2SA1034	1C	2SB902
H	2SA1035	1F	2SK321
I	2SB792	1K	2SK316
K	2SC2778	1L	2SK247
P	2SD814	1M	2SJ84
Q	2SD813	1N	2SK199
R	2SC2480	1O	2SK198
S	2SC2405	1T	2SC3077
T	2SC2406	1X	2SC2845
U	2SC2404	1Z	2SD1030
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116
BQ	2SB766A	UMT	2SC4081

(Small Chip Transistor)

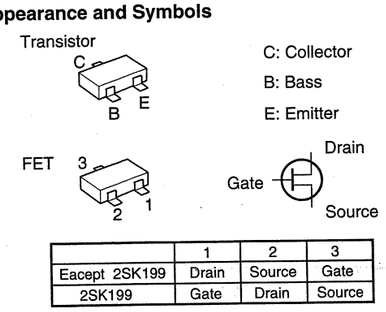
Letter	Transistor No.
A	2SB1218
B	2SB1218A
D	2SB1219A
U	2SC3931
W	2SD1820
X	2SD1820A
Y	2SD1819
E3	2SA1226
OS	2SB1219
UC	2SA1532
YU	2SC3938

(Pair Transistor)

Letter	Transistor No.	Letter	Transistor No.
5R	XN1501	5H	XP4501
7S	XN1601	5C	XP4601
5H	XN4501	5H	XP4501
5C	XN4601	5L	XP5501
5L	XN5501	4N	XP5601
4N	XN5601	7S	XP6501
5N	XN6501	7W	XP6435
7W	XN6435	7F	XP6534
7F	XN6534	X1	UMX1
5R	XP1501	Z1	UMZ1
7S	XP1601		

Example: WQ → 2SD602-Q
YQ → 2SD601-Q
1BS → 2SB814-S

Appearance and Symbols



	1	2	3
Eacept 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

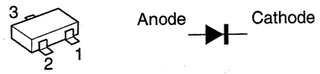
2. Chip Diode

The diode number is indicated on the top surface of the chip diode using two alphabet letters.

Diode Number

	1	2	3
MA28/MA28W/MA28T	–	Anode	Cathode
MA151K/MA152K	–	Anode	Cathode
MA151A/MA152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common
MA141K	–	Anode	Cathode
MA143	Anode	Cathode	Common
MA3062	Anode	–	Cathode
RD421D	Anode	–	Cathode

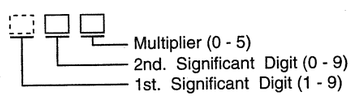
Appearance and Symbol



	1	2	3
MA28/MA28W/MA28T	–	Anode	Cathode
MA151K/MA152K	–	Anode	Cathode
MA151A/MA152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common
MA141K	–	Anode	Cathode
MA143	Anode	Cathode	Common
MA3062	Anode	–	Cathode
RD421D	Anode	–	Cathode

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.



Example:

330 → 33×10^0 = 33 Ω
561 → 56×10^1 = 560 Ω
123 → 12×10^3 = 12 kΩ

Note: Zero ohm resistor (jumper chip) is colored red or green.

4. Chip Capacitor

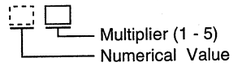
The capacitive value of replacement chip capacitors is indicated on the bottom surface. original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

Example:

0.5 → 0.5 pF 2.5 → 2.5 pF
.75 → 0.75 pF 33 → 33 pF
1 → 1 pF 82 → 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

* Letters I and O are not used.

Example: A1 → 10×10^1 = 100 pF
N2 → 33×10^2 = 3300 pF
S3 → 47×10^3 = 47000 pF

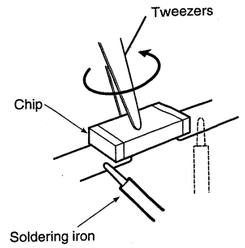
5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal.
4. Do not rub the electrode of chips.
5. Do not subject the chips to excessive stress.
6. It is recommended that a pencil-type soldering iron to be used.
7. The solder whose diameter is less than 0.5 mm is recommended.
8. Do not heat the chip beyond 3 second.
9. Maintain temperature control under 260°C (500°F) when soldering.

5-1. Removal (Transistor, Diode, Resistor and Capacitor)

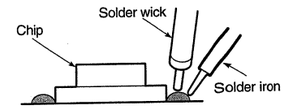
1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning with tweezers.

Note: Be careful not to damage other chips.

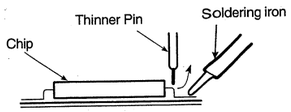


5-2. Removal (IC)

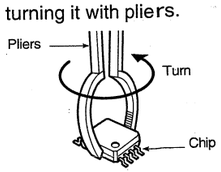
1. Add the solder wick and soldering iron to each lead of the IC and remove solder.



2. Add the soldering iron to each lead of the IC and left each lead of the IC using thinner pin.

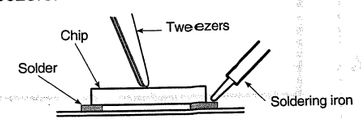


3. Remove IC turning it with pliers.

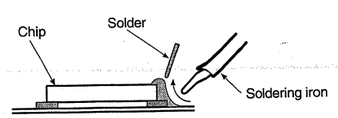


5-3. Mounting

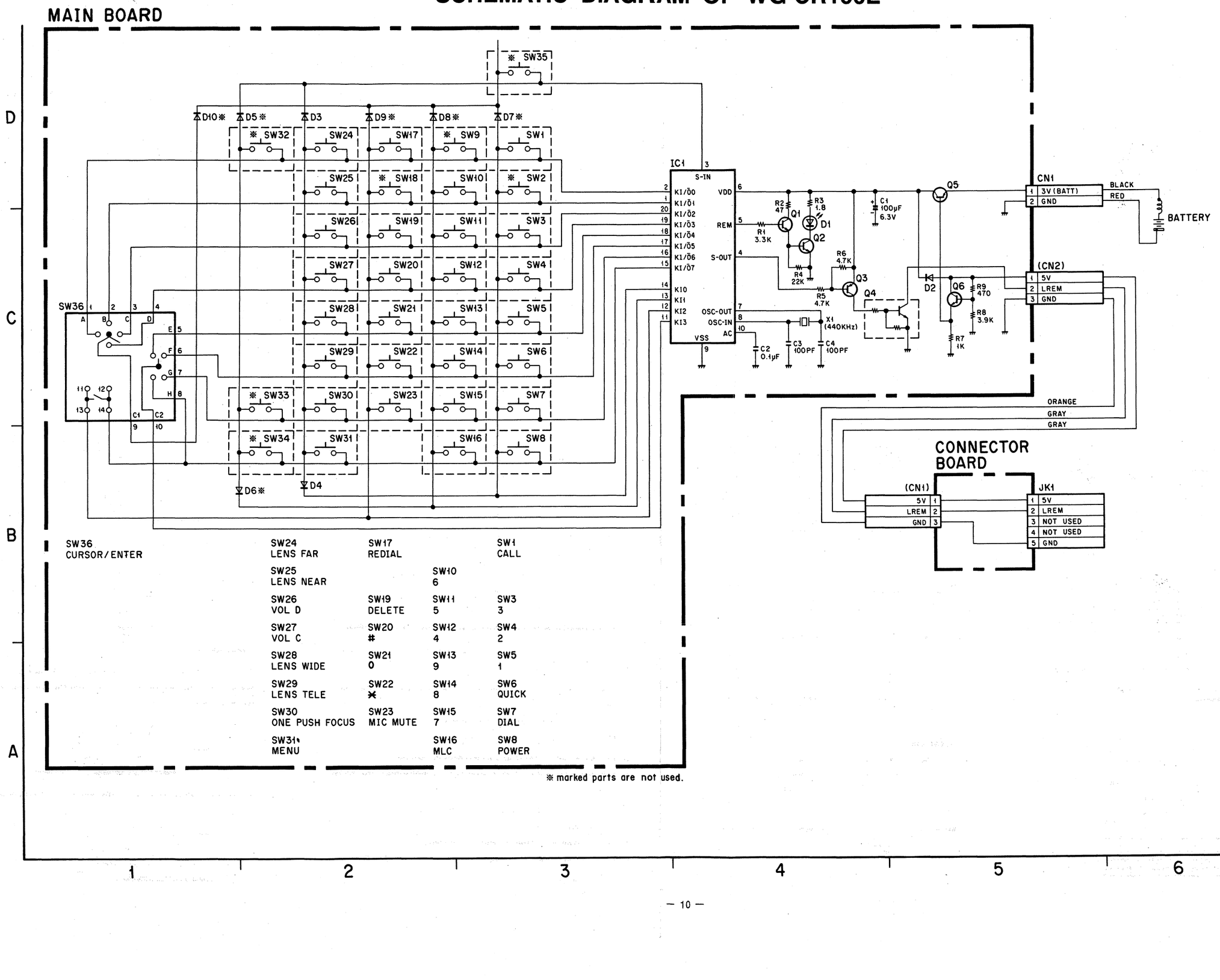
1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarily while holding the chip with the tweezers.



3. Solder both ends of chip (three leads for chip transistor).



SCHEMATIC DIAGRAM OF WG-CR100E

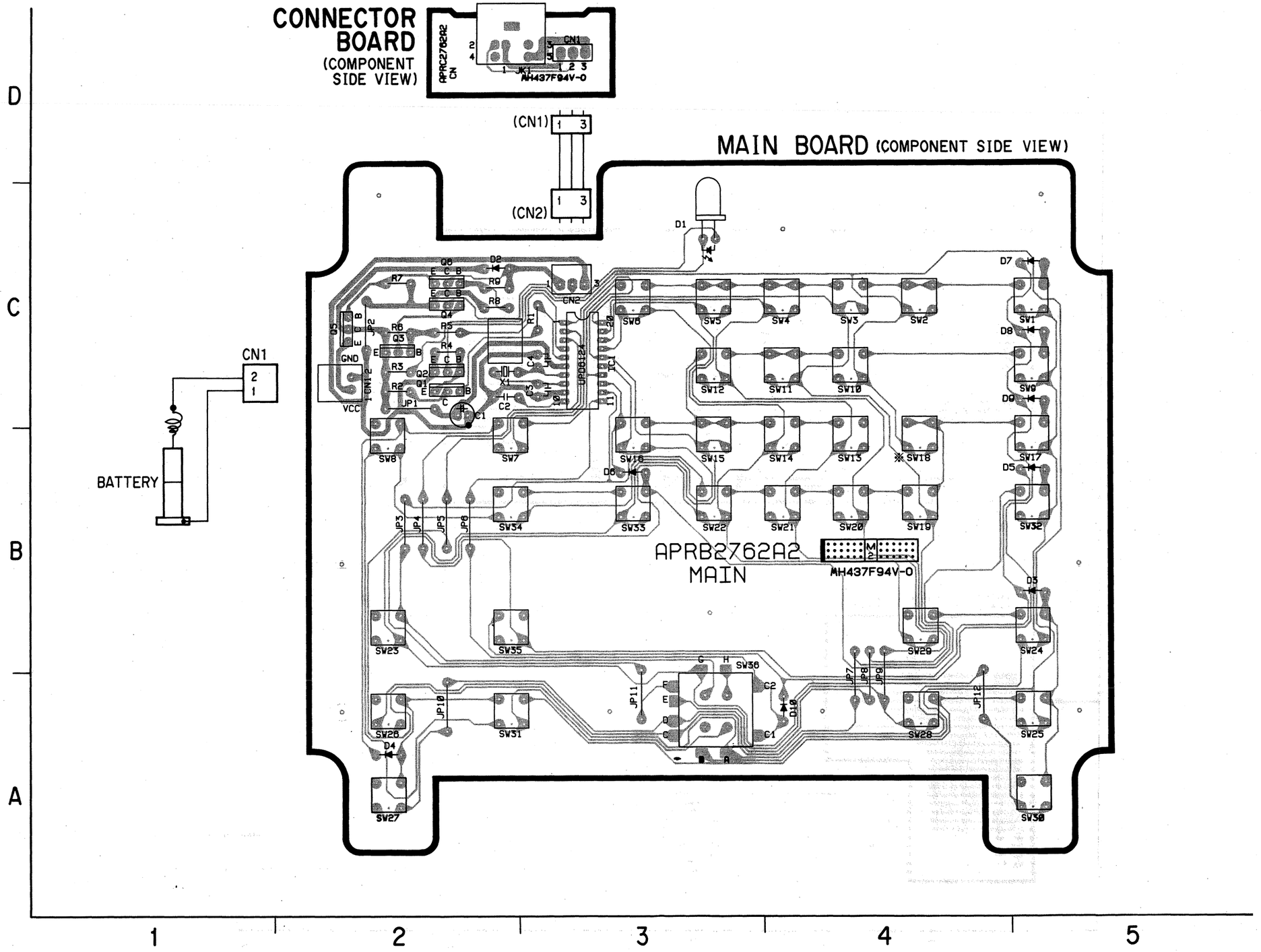


SW36
CURSOR/ENTER

SW24 LENS FAR	SW17 REDIAL		SW1 CALL
SW25 LENS NEAR		SW10 6	
SW26 VOL D	SW19 DELETE	SW11 5	SW3 3
SW27 VOL C	SW20 #	SW12 4	SW4 2
SW28 LENS WIDE	SW21 0	SW13 9	SW5 1
SW29 LENS TELE	SW22 ✱	SW14 8	SW6 QUICK
SW30 ONE PUSH FOCUS	SW23 MIC MUTE	SW15 7	SW7 DIAL
SW31 MENU		SW16 MLC	SW8 POWER

※ marked parts are not used.

CONDUCTOR VIEW OF WG-CR100E

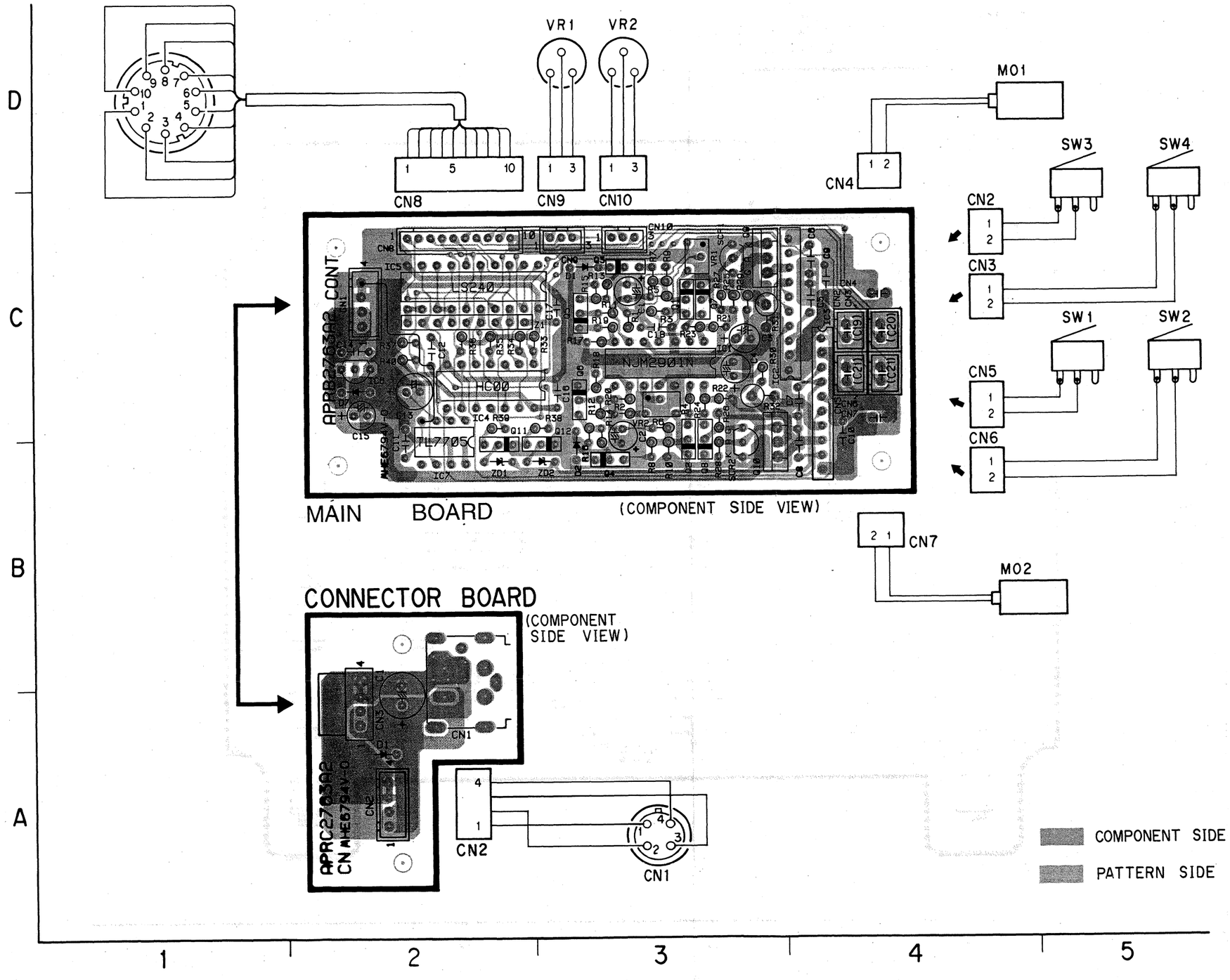


<INDEX>

MAIN BOARD

IC1	C3
Q1	C2
Q2	C2
Q3	C2
Q4	C2
Q5	C2
Q6	C2
D1	C3
D2	C2
D3	B5
D4	A2

CONDUCTOR VIEW OF WG-PT100E

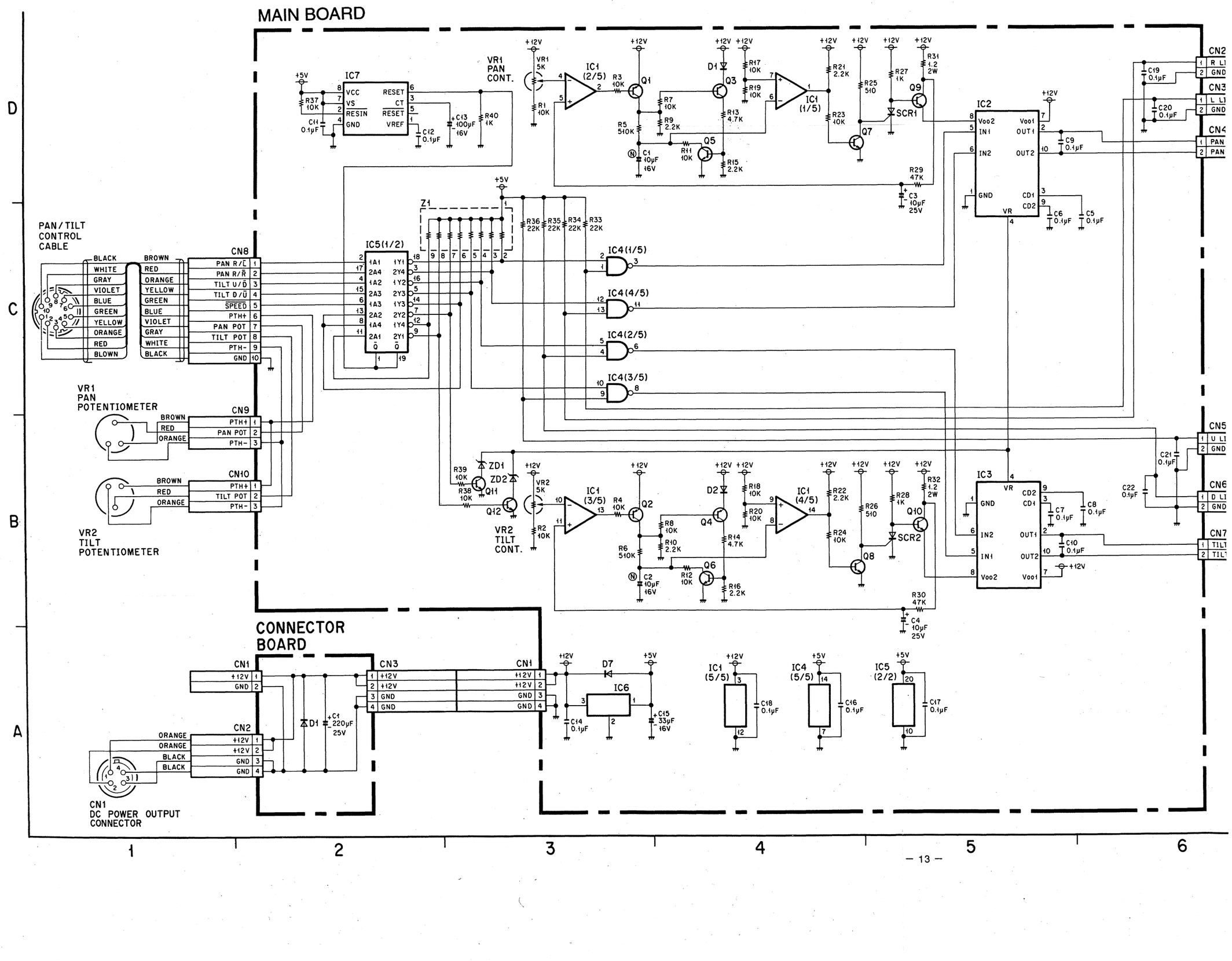


<INDEX>

MAIN BOARD

IC1	C3
IC2	C4
IC3	C4
IC4	C2
IC5	C2
IC6	C2
IC7	C2
Q1	C3
Q2	C3
Q3	C3
Q4	B3
Q5	C3
Q6	C3
Q7	C3
Q8	B3
Q10	B3
Q11	B2
Q12	B3
D1	C3
D2	B3
ZD1	B2
ZD2	B3
D7	A2

SCHEMATIC DIAGRAM OF WG-PT100E



EXPLODED VIEW OF WG-PT100E

◯ Numbers show screws, washers, nuts and etc.

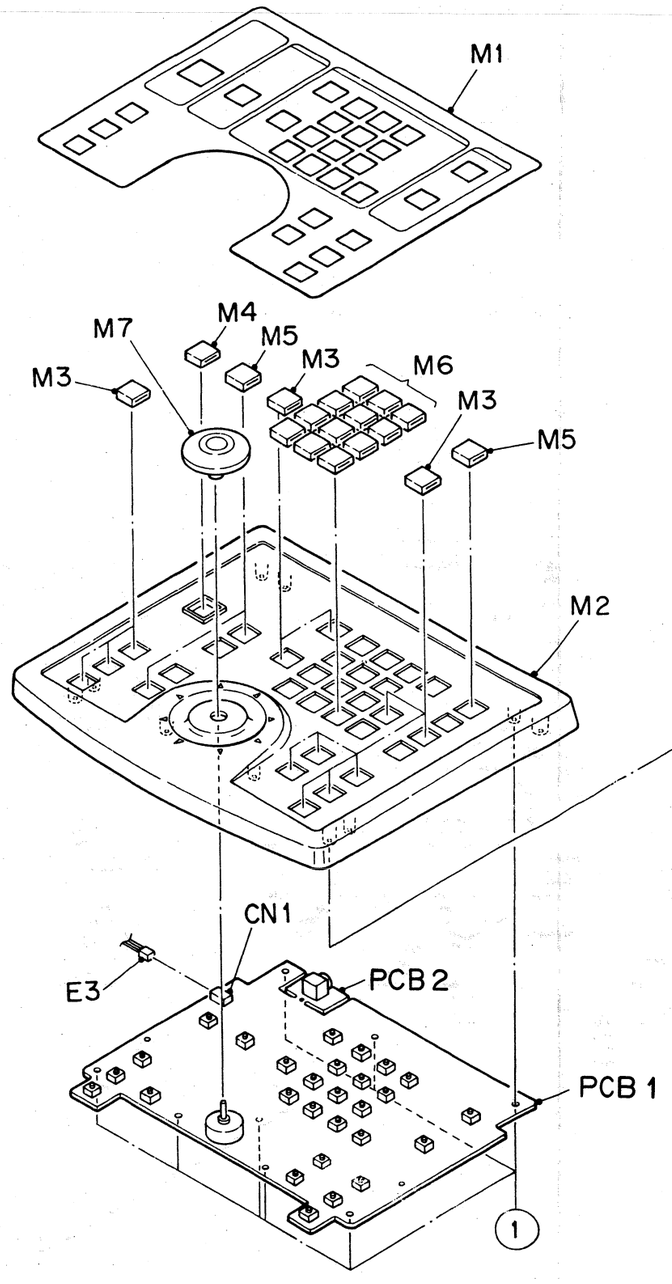
No.	Screw	Description
①	XQN2+A12FXK	Slotted Head Black Machine Screws
②	XQN2+A8FXK	Slotted Head Black Machine Screws
③	XSB3+12FXK	Binding Head Black Screws
④	XSB3+6FXK	Binding Head Black Screws
⑤	XSB4+12FXK	Binding Head Black Screws
⑥	XSB4+6FXK	Binding Head Black Screws
⑦	XSS4+8FXK	Flush Head Black Screws
⑧	XTW3+5LFXK	Washer Head Tapping Black Screws
⑨	XTW4+8LFXK	Washer Head Tapping Black Screws
⑩	XXE2D2FP	Hexagon Socket Set Screws
⑪	XXE3A4FP	Hexagon Socket Set Screws
⑫	XXE3D2FP	Hexagon Socket Set Screws
⑬	XNG3HS	Hexagon Heads Nuts
⑭	XPL2B8WFP	Spring Pins
⑮	XUC2FY	Retaining Ring Type E
⑯	XUC3FY	Retaining Ring Type E
⑰	XUC4FY	Retaining Ring Type E
⑱	XUD12FY	Retaining Ring Type E
⑲	XSS26+5FN	Flush Head Screws

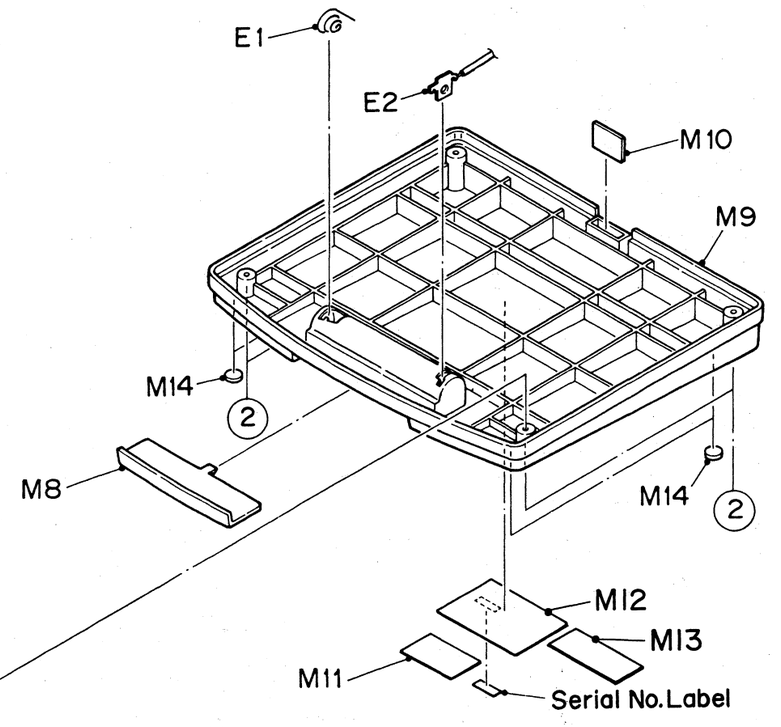
PACKAGING

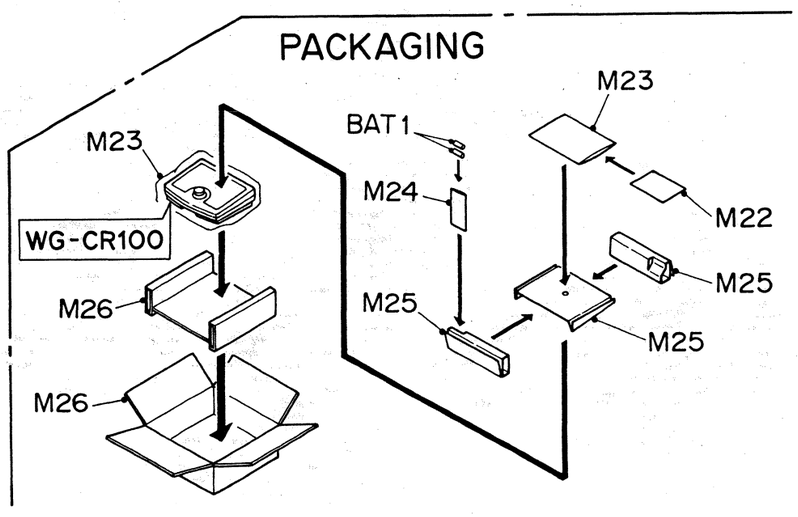
EXPLODED VIEW OF WG-CR100E

◯ Numbers show screws, washers, nuts and etc.

No.	Screw	Description
①	XTB3+8BFX	Binding Head Tapping Screws
②	XTB3+8BFXK	Binding Head Tapping Black Screws







REPLACEMENT PARTS LIST

Important Notice

1. Components identified by " ⚠ " mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited.

REF.NO.	PART NO.	DESCRIPTION
BACK ELECTRET CONDENSER MICROPHONE WG-M100E		
MISCELLANEOUS		
MIC 1	WM-55ABMD	Mic Unit
CN10	YWHR10A7R4S	4-pin Connector
E1	EMCM806D01	Wire Assy
M1	YWM9AE0425A3	Upper Cover Assy
M2	YWM2SB1367A3	Mounting Angle for Connector
M3	YWM2HA0675A4	Shield Plate
M4	YWM2FA0303A4	Shield Cushion
M5	YWM9AC0428A4	Bottom Cover Ass'y
M6	YWM7SF0749A4	Indication Label
MAIN BOARD		
PCB1 (RTL)	YWGM100P01	Printed Circuit Board Assy
IC1	YWNJM062D	IC
Q1-3	2SC2634-RS	Transistor
D1	MTZ7.5CT77	Diode
D2,3	YWMTZ5.6B	Diode
D4-7	MA165	Diode
R1	ERDS2TJ122	Carbon 1.2K ohms 1/4W
R2	ERDS2TJ153	Carbon 15K ohms 1/4W
R3	ERDS2TJ913	Carbon 91K ohms 1/4W
R4	ERDS2TJ333	Carbon 33K ohms 1/4W
R5	ERDS2TJ153	Carbon 15K ohms 1/4W
R6	ERDS2TJ562	Carbon 5.6K ohms 1/4W
R7	ERDS2TJ102	Carbon 1K ohms 1/4W
R8	ERDS2TJ821	Carbon 820 ohms 1/4W
R9	ERDS2TJ103	Carbon 10K ohms 1/4W
R10,11	ERDS2TJ104	Carbon 100K ohms 1/4W
R12	ERDS2TJ473	Carbon 47K ohms 1/4W
R13	ERDS2TJ752	Carbon 7.5K ohms 1/4W
R14,15	ER0S2CKF1002	Metal 10K ohms 1/4W
R16	ERDS2TJ512	Carbon 5.1K ohms 1/4W
R17,18	ER0S2CKF1001	Metal 1K ohms 1/4W
R19	ERDS2TJ332	Carbon 3.3K ohms 1/4W
R20	ERDS2TJ222	Carbon 2.2K ohms 1/4W
R21	ERDS2TJ123	Carbon 12K ohms 1/4W
R22	ERDS2TJ392	Carbon 3.9K ohms 1/4W

REF.NO.	PART NO.	DESCRIPTION
VR	EVND8AA03BE3	Variable Resistor 2.2K ohms
C1	ECKF1H102KB	Ceramic 1000 pF 50V
C2,3	ECEA1CU100	Electrolytic 10 µF 16V
C4	ECKF1H102KB	Ceramic 1000 pF 50V
C5	ECEA1EU4R7	Electrolytic 4.7 µF 25V
C6,7	ECQM1H563JZ	Plastic 0.056 µF 50V
C8	ECEA1CU101	Electrolytic 100 µF 16V
C9	ECQM1H104JZ	Plastic 0.1 µF 50V
C10,11	ECEA1EU220	Electrolytic 22 µF 25V
C12,13	ECQB1H102JF	Plastic 1000 pF 50V
C14	ECEA1EU101	Electrolytic 100 µF 25V
C15	ECQM1H104JZ	Plastic 0.1 µF 50V
C16,17	ECEA1CU100	Electrolytic 10 µF 16V
C18	ECQM1H104JZ	Plastic 0.1 µF 50V
C19	ECEA1CU100	Electrolytic 10 µF 16V
C20	ECQM1H104JZ	Plastic 0.1 µF 50V
C21	ECQB1H332JZ	Plastic 3300 pF 50V
CN1	EMCS0852M	8-pin Connector
M15	YWM2SA1041A4	Mounting Angle
M16	YPM-MG247AA4	Cushion
ACCESSORY PARTS/PACKAGING PARTS		
E10	YWMLKA0657A4	Wire Assy
M10	YWM8QA4130AN	Operating Instructins
M11	YWT15X20C03	Polyethylene Bag
M12	YWT10X35C03	Polyethylene Bag
M13	YWM9CB2413AN	Packaging Assy

REF.NO.	PART NO.	DESCRIPTION
PAN/TILT UNIT WG-PT100E		
MISCELLANEOUS		
MO1,2	YWDME25B119	DC Motor
VR1,2	RV12YN15SB13	Variable Resistor 1K ohms
SW1-4	YWAH1662	Micro Switch
CN1	YWHR10A7R4S	AC Outlet Connector
E1	YWE0110J617	Camera Control Cable
BI 2	YWGPT100L05	Wire Assy for Pan Pot and Main Board CN9
BI 3	YWGPT100L06	Wire Assy for Tilt Pot and Main Board CN10
BI 4	YWGPT100L03	Wire Assy for Lip Limit Switch and Main BoardCN5
BI 5	YWGPT100L04	Wire Assy for Down Limit Switch and Main Board CN6
BI 6	YWGPT100L01	Wire Assy for Left Limit Switch and Main Board CN2
BI 7	YWGPT100L02	Wire Assy for Right Limit Switch and Main Board CN3
BI 8	YWGPT100L07	Wire Assy for AC Outlet Connector
M1	YWS5EA1389A2	Cover A
M2	YWS6GA0270B2	Plate
M3	YWS4JA0492B4	Spring
M4	YWS4NA0006A4	Belt
M5	YWW693ZZA	Roller
M6	YWS4EA0053A4	Gear
M7	YWS4HA0209B4	Shaft
M8	YWMR84ZZ	Roller
M9	YWS4EA0054A4	Gear
M10	YWS4HA0208B4	Shaft
M11	YWS4EA0051A4	Gear
M12	YWS4HA0211A4	Shaft
M13	YWF695ZZ	Roller
M14	YWS4EA0057A4	Gear
M15	YWS1CA0023A4	Retaining Ring
M16	YWMR95ZZS	Roller
M17	YWS2TA0352A4	Mounting Bracket
M18	YWS2WA0165B2	Frame
M19	YWS4MA0004B4	Pulley
M20	YWS4HA0210A4	Shaft
M21	YWS6FA0174A4	Motor Bracket
M22	YWS2WA0164A2	Frame
M23	YWS5EC1390A2	Cover B
M24	YWS2TA0342A4	Mounting Bracket
M25	YWS2TA0343A4	Mounting Bracket
M26	YWS6GA0269A2	Plate
M27	YWS4HA0207A4	Shaft
M28	YWS6GA0273A4	Plate
M29	YWS4RA0117A4	Lever
M30	YWS1HA0073A4	Pin

REF.NO.	PART NO.	DESCRIPTION
M31	YWS4JA0491A4	Spring
M32	YWS2WA0161A3	Frame
M33	YWS1HA0077A4	Pin
M34	YWS1HA0074A4	Pin
M35	YWS4EA0056A4	Gear
M36	YWS4EA0058A3	Gear
M37	YWS2TA0349A4	Mounting Bracket
M38	YW51106	Roller
M39	YW6901ZZ	Roller
M40	YWS4RA0118A4	Lever
M41	YWS6GA0272A4	Plate
M42	YWS4JA0490A4	Spring
M43	YWS4RA0119A4	Lever
M45	YWS2TA0351A4	Mounting Bracket
M48	YWS6GA0271A4	Plate
M44	YWS1HA0076A4	Pin
M46	YWS1HA0075A4	Pin
M47	YWS1HA0078A4	Pin
M49	YWS4EA0052A4	Gear
M50	YWF816	Roller
M51	YWS2TA0348A4	Mounting Bracket
M52	YWS4JA0489A4	Spring
M53	YWS2TA0350A3	Mounting Bracket
M54	YWS4JA0493B4	Spring
M55	YWP-20	Cord Clamp
M56	YWS2NA0474A4	Spacer
M57	YWS2TA0346A4	Mounting Bracket
M58	YWS2WA0162A1	Frame
M59	YWS4EA0055A4	Gear
M60	YWS2TA0344A4	Mounting Bracket
M61	YWS5EA1391A4	Potentin Metor Cover
M62	YWS2TA0345A4	Mounting Bracket
M63	YWS4EA0050A4	Gear
M64	YWS4HA0206A4	Shaft
M65	YWS2WA0163A2	Frame
M66	YWS2FA0686A4	Cushion
M67	YWS7QA4157A4	Main Label
M68	YWS2TA0347A4	Mounting Bracket
M69	YFV7MA0099A4	Safety Label
M70	YWS2NA0486A4	Spacer

MAIN BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB1 (RTL)	YWGPT100PA1	Printed Circuit Board Assy
IC1	YWNJM2901N	IC
IC2,3	YWBA6219B	IC
IC4	YWHD74HC00P	IC
IC5	HD74LS240P	IC
IC6	NJM78L05A	IC
IC7	YWTL7705ACP	IC
Q1-4	2SA1254-BC	Transistor
Q5-8	2SC2206-BC	Transistor
Q9,10	2SD1276A-QR	Transistor
Q11,12	2SC2206-BC	Transistor
D1	YWHZ12A2	Diode
	1SS133	Diode
D2	YWHZ6B3	Diode
D2,7	1SS133	Diode
SCR1,2	YW03P2M	Thyristor
R1-4	ERDS2TJ103	Carbon 10K ohms 1/4W
R5,6	ERDS2EJ514	Carbon 510K ohms 1/4W
R7,8	ERDS2TJ103	Carbon 10K ohms 1/4W
R9,10	ERDS2TJ222	Carbon 2.2K ohms 1/4W
R11,12	ERDS2TJ103	Carbon 10K ohms 1/4W
R13,14	ERDS2TJ472	Carbon 4.7K ohms 1/4W
R15,16	ERDS2TJ222	Carbon 2.2K ohms 1/4W
R17-20	ERDS2TJ103	Carbon 10K ohms 1/4W
R21,22	ERDS2TJ222	Carbon 2.2K ohms 1/4W
R23,24	ERDS2TJ103	Carbon 10K ohms 1/4W
R25,26	ERDS2TJ511	Carbon 510 ohms 1/4W
R27,28	ERDS2TJ102	Carbon 1K ohms 1/4W
R29,30	ERDS2TJ473	Carbon 47K ohms 1/4W
R31,32	ERX2SJ1R2	Metal 1.2 ohms 1/4W
R33-36	ERDS2TJ223	Carbon 22K ohms 1/4W
R37-39	ERDS2TJ103	Carbon 10K ohms 1/4W
R40	ERDS2TJ102	Carbon 1K ohms 1/4W
VR1,2	YWRJ5W502	Variable Resistor 5K ohms
Z1	EXBF9E223J	Block Resistor
C1,2	ECEA1CSN100	Electrolytic 10 µF 16V
C3,4	ECEA1EKS100	Electrolytic 10 µF 25V
C5-12	RPE132F104Z	Ceramic 0.1 µF
C13	ECEA1CKA101	Electrolytic 100 µF 16V
C14	RPE132F104Z	Ceramic 0.1 µF
C15	ECEA1CKA330	Electrolytic 33 µF 16V
C16-22	RPE132F104Z	Ceramic 0.1 µF
CN1	YFB4B-XH-A	4-pin Connector
CN2-7	YWB2BXHA	2-pin Connector
CN8	YWB10BPHKS	10-pin Connector
CN9,10	YWB3BPHKS	3-pin Connector

CONNECTOR BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2 (RTL)	YWGPT100PA2	Printed Circuit Board Assy
D1	YW1S1585	Diode
C1	ECEA1EU221	Electrolytic 220 µF 25V
CN1	YWTCS796043	2-pin Connector
CN2	YFB4B-XH-A	4-pin Connector
CN3	YW04JQST	4-pin Connector

ACCESSORY PARTS/PACKAGING PARTS

E10	YWALKA0660A4	Camera Power Cable
M76	YWS8QA4107AN	Operating Instructions
M77	YWT10X10C03	Polyethylene Bag
M78	YWV421-EM01U	Special Screw
M79	XZB26X40C05	Polyethylene Bag
M80	XZB35X50C05	Polyethylene Bag
M81	YWS9CA3090AN	Packaging Assy

REF.NO.	PART NO.	DESCRIPTION
REMOTE CONTROLLER WG-CR100E		
MISCELLANEOUS		
E1	YWS4JA0486A4	Electrode for Coil Spring
E2	YWS2QA0214A4	Electrode for Spring Plate
E3	YWGCR100L02	Wire Ass'y
M1	YWS7QB3415A3	Decoration Panel
M2	YWS5EA1376A1	Upper Cover
M3	YWLZ0104	Knob
M4	YWLZ0105	Knob
M5	YWLZ0106	Knob
M6	YWS9AA0939A4	Mechanical Ass'y
M7	YWS5RA0427A4	Knob
M8	YWS6EA0202A3	Lid
M9	YWS5EA1377A1	Bottom Cover
M10	YWS1RA0029A4	Optical Filter
M11	YWS7SA2105A4	Battery Label
M12	YWS7QA4158A4	Main Label
M13	YFV7MA0099A4	Safety Label
M14	YWA5LA0002A4	Rubber Foot
MAIN BOARD		
PCB1 (RTL)	YWGCR100PA1	Printed Circuit Board Assy
IC1	YWD61P24CS	Custom IC
Q1,2	2SC1652MQR	Transistor
Q3	2SA874MQR	Transistor
Q4	DTD114	Transistor
Q5	2SB909	Transistor
Q6	2SC1652MQR	Transistor
D1	LN66A	LED
D2	YWAM01Z	Diode
D3,4	1SS133	Diode
R1	ERDS2TJ332	Carbon 3.3K ohms 1/4W
R2	ERDS2TJ470	Carbon 47 ohms 1/4W
R3	ERDS2TJ1R8	Carbon 1.8 ohms 1/4W
R4	ERDS2TJ223	Carbon 22K ohms 1/4W
R5,6	ERDS2TJ472	Carbon 4.7K ohms 1/4W
R7	ERDS2TJ102	Carbon 1K ohms 1/4W
R8	ERDS2TJ392	Carbon 3.9K ohms 1/4W
R9	ERDS2TJ471	Carbon 470 ohms 1/4W
C1	ECEA0JKS101	Electrolytic 100 µF 6.3V
C2	RPE132F104Z	Ceramic 0.1 µF
C3,4	ECCF1H101JC	Ceramic 100 pF 50V
SW1,3	YWLTM101	Push Switch
SW4-8	YWLTM101	Push Switch
SW10-17	YWLTM101	Push Switch
SW19-31	YWLTM101	Push Switch
SW36	YWHXW0701	Lever Switch
X1	YWCSB440EB1	Oscillator
E10	YWGCR100L01	Wire Assy
CN1	YWS2BEH	2-pin Connector
CONNECTOR BOARD		
PCB2 (RTL)	YWGCR100PA2	Printed Circuit Board Assy
JK1	YWD5175J200	Jack
ACCESSORY PARTS/PACKAGING PARTS		
BAT1	YWUM-3DEP	Battery
M22	YWS8QA4106AN	Operating Instructions
M23	XZB26X40C05	Polyethylene Bag
M24	YWT10X10C03	Polyethylene Bag
M25	YWS9CA3089AN	Packaging Assy

V21235

ORDER NO. AVS9603139S8

Service Manual

Pan/Tilt Unit

WG-PT100

Supplement - 1

Please file and use this supplement service manual together with the service manual for Model No. WG-CR100, WG-PT100 and WG-M100, order NO. AVS9512075C8.

■ WG-PT100

The Adjustment Procedure and the Installing Procedure for Potentiometer have been added to the original service manual.

Panasonic

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

ADJUSTMENT PROCEDURE

1. Test Equipment Required

- The following Test Equipments are required for adjustment of the Pan/Tilt Unit WG-PT100.

- Power Supply Unit (12 V DC more than 2 A; WG-PS100)
- Digital Voltmeter

2. Disassembling Procedure for Adjustment

- Referring to Fig. 2-1, remove seven screws that secure the Cover A and remove the Cover A.

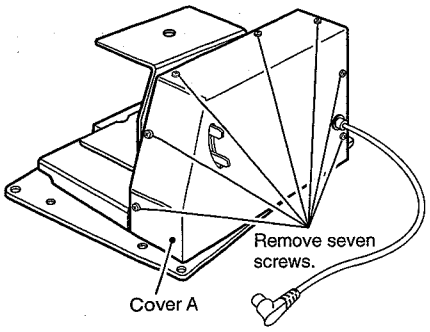


Fig. 2-1

3. Connection for Adjustment

- Referring to Fig. 3-1, connect the Power Supply Unit (12 ± 0.6 V DC) to the External DC Input Connector (CN1) of the WG-PT100.

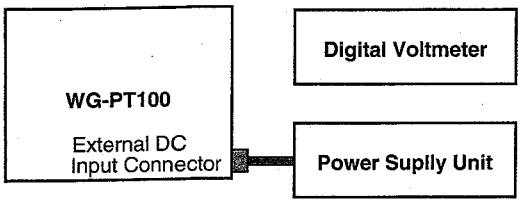


Fig. 3-1

4. Adjustment Procedure

1. Pan Over-Current Protection Comparator Reference Voltage Adjustment

Test Point:	**Pin 4 of IC1 (P-REF)**	**Control Board**
	Pin 12 of IC1 (GND)	**Control Board**
Adjust:	**VR1 (PAN CONT.)**	**Control Board**

- Connect the Digital Voltmeter to the pin 4 (+) and pin 12 (–) of IC1.
- Adjust VR1 to obtain 10.8 ± 0.05 V DC.

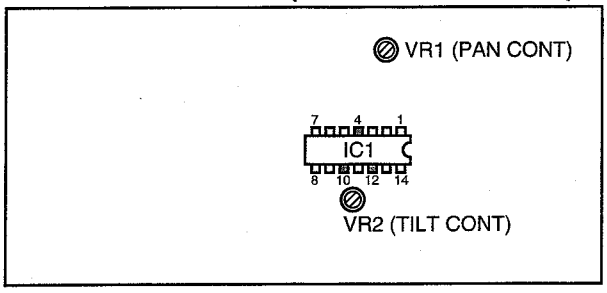
2. Tilt Over-Current Protection Comparator Reference Voltage Adjustment

Test Point:	**Pin 10 of IC1 (T-REF)**	**Control Board**
	Pin 12 of IC1 (GND)	**Control Board**
Adjust:	**VR2 (TILT CONT.)**	**Control Board**

- Connect the Digital Voltmeter to the pin 10 (+) and pin 12 (–) of IC1.
- Adjust VR2 to obtain 10.8 ± 0.05 V DC.

LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

CONTROL BOARD (COMPONENT SIDE)

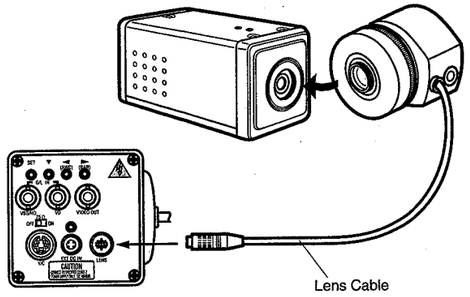


INSTALLING PROCEDURE FOR POTENTIOMETER

■ Mounting the Lens

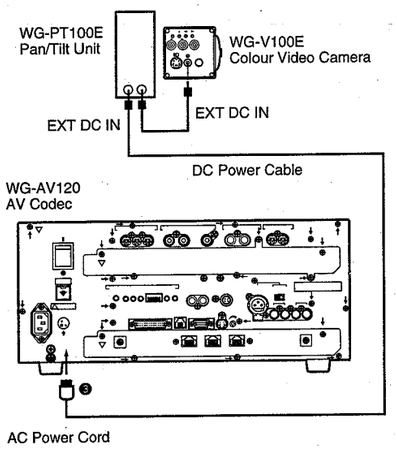
Mount the Auto Focus Lens (supplied with the WG-V100E Colour Video Camera) as shown below.

(1) Remove the body cap on the Lens Mount of the camera
(2) Mount the lens by turning it clockwise onto the Lens Mount of the camera
(3) Connect the lens cable to the Lens Connector (LENS) on the back panel of the camera.



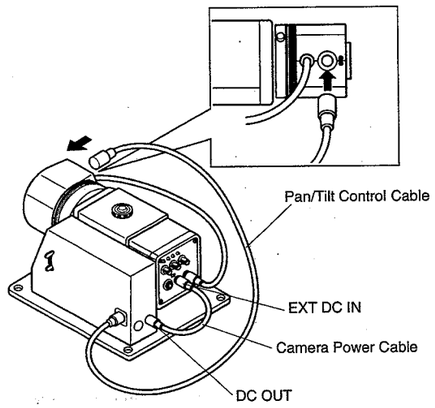
■ Connection with the Pan/Tilt Unit

Connect the AC Power Cord between the WG-PT100E and the WG-AV120.



■ Connection between the Camera and the Pan/Tilt Unit

1. Connect the Pan/Tilt Control Cable from the Pan/Tilt Unit to the connector on the Lens.
2. Connect the Camera Power Cable between the DC Power Output on the rear of the Pan/Tilt Unit and External DC Input (EXT DC IN) on the rear of the camera.



1. Pan Potentiometer

- Move the panning Limit Levers to the Initial position as shown in Fig. 1-1.

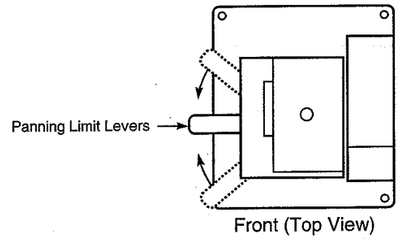


Fig. 1-1

- Turn the Camera Mounting Bracket to the Left-End side by the Remote Controller as sown in Fig. 1-2.

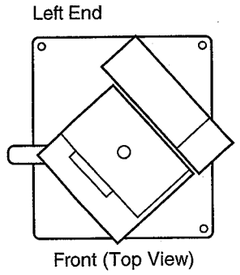


Fig. 1-2

- Remove two screws that secure the Pan Potentiometer Cover and remove the Pan Potentiometer Cover as shown in Fig. 1-3.

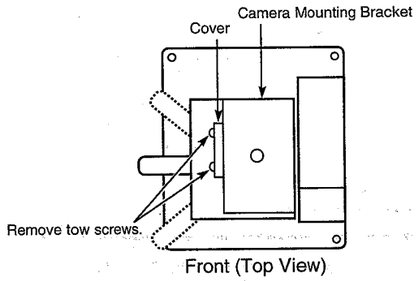


Fig. 1-3

- Remove two screws that secure the Pan Potentiometer Angle and remove the Pan Potentiometer Angle as shown in Fig. 1-4.

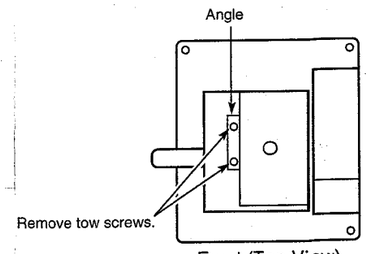


Fig. 1-4

- Remove the Gear from the Pan Potentiometer by loosing two hexagon screws.
- Remove the Hexagon Nut and Washer that secure the Pan Potentiometer, and remove the Pan Potentiometer.
- Mount the new Potentiometer to the Bracket with supplied Washer and Hexagon Nut with the Potentiometer.
- Mount the Gear to the Pan Potentiometer by tightening two hexagon screws.
- Turn the Potentiometer to the maximum as same direction as the Camera Mounting Bracket as shown in Fig. 1-5.

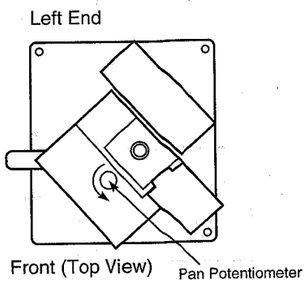


Fig. 1-5

- Return the Pan Potentiometer by approximately 5°.
  Note: This means, the Potentiometer does not reach to the End when the Camera Mounting Bracket rotate to the Left-End.
- Install the Pan Potentiometer.
  Note: Rotate the Pan Potentiometer to the Returning side if both Gears does not engaged.
- Turn the Camera Mounting Bracket to the Right-End side by the Remote Controller.
- Confirm that the stage Ⓑ of the Camera Mounting Bracket have been on the Lever as shown in Fig. 1-6.

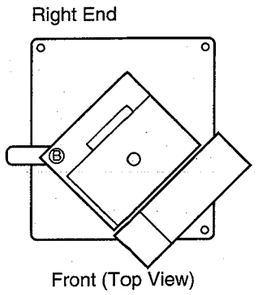


Fig. 1-6

- Turn the Camera Mounting Bracket to the Center position by the Remote Controller.
- Connect the Digital Voltmeter to the pin 2 and pin 3 of CN9 on the Control Board.
- Confirm that the voltage at pin 2 of CN9 on the Control Board should be within 1.75 ± 0.5 V.

2. Tilt Potentiometer

- Move the Tilting Limit Levers to the Initial position as shown in Fig. 2-1.

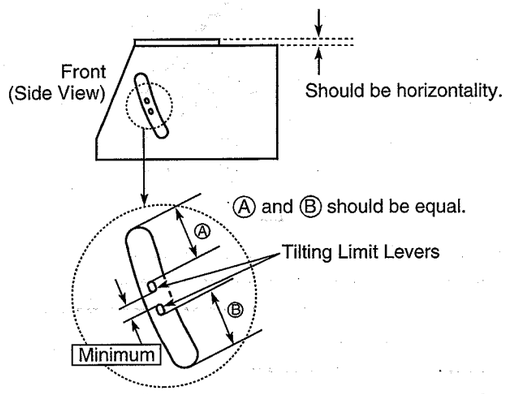


Fig. 2-1

- Turn the Tilt Motor to the Upper-End side by remote Controller as shown in Fig. 2-2.

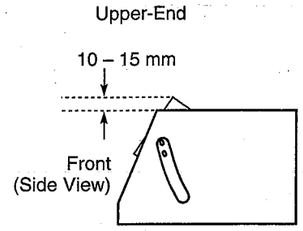


Fig. 2-2

- Remove seven screws that secure the Cover A as shown in Fig. 2-3.

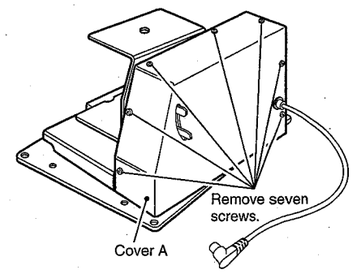


Fig. 2-3

- Remove one screw that secure the Potentiometer Angle and remove the Potentiometer Angle as shown in Fig. 2-4.

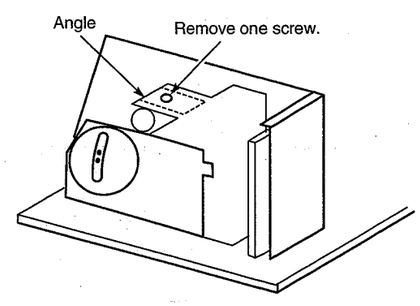


Fig. 2-4

- Remove the Gear from Tilt Potentiometer by loosing two hexagon screws.
- Remove the Hexagon Nut and Washer that secure the Tilt Potentiometer and remove the Potentiometer.
- Mount the new Potentiometer to the Bracket with supplied Washer and Hexagon Nut with the Potentiometer.
- Mount the Gear to the Tilt Potentiometer by tightening two hexagon screws.
- Turn the Potentiometer to maximum as direction of the arrow as shown in Fig. 2-5.

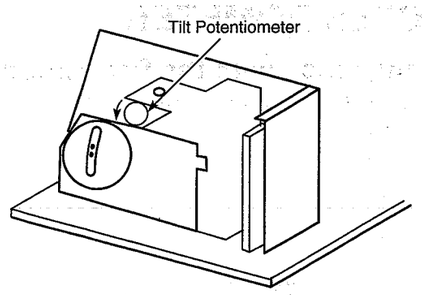


Fig. 2-5

- Return the Tilt Potentiometer by approximately 5°.
  Note: This means, the Potentiometer does not reach to the End when the Camera Mounting Bracket rotate to the Upper-End.
- Install the Tilt Potentiometer.
  Note: Rotate the Tilt Potentiometer to the Returning side if both Gears does not engaged.
- Turn the Camera Mounting Bracket to the Down-End position by the Remote Controller.
- Confirm that the Camera Mounting Bracket have been Higher than approximately 25 – 30 mm from the Cover A as shown in Fig. 2-46

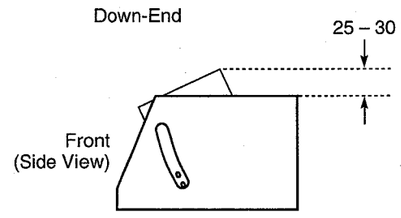


Fig. 2-6

- Turn the Camera Mounting Bracket to the center position by the Remote Controller.
- Connect the Digital Voltmeter to the pin 2 and pin 3 of CN10 on the Control Board.
- Confirm that the voltage at pin 2 of CN10 on the Control Board should be within 1.75 ± 0.5 V.

■ The Angle of Rotation relationship between the Camera Mounting Bracket and the Potentiometer is as follows:

- The maximum Angle of Rotation of Potentiometer is 300°.

Panning

	Maximum Angle of Rotation of Camera Mounting Bracket		Angle of Rotation of Potentiometer
PAN LEFT	40°	Totally 80°	240°
PAN RIGHT	40°		

Tilting

	Maximum Angle of Rotation of Camera Mounting Bracket		Angle of Rotation of Potentiometer
TILT UP	18°	Totally 38°	152°
TILT DOWN	20°		

- The Camera Mounting Bracket is positions in front in Pan position and in horizontal in Tilt position, in other words, the Camera Mounting Bracket is positions in the center and the Potentiometers are mounted exactly center so that the margin of the Angle of the Rotation of the Potentiometers when the Camera Mounting Bracket rotated from the one end to the other end as follow:

Pan: Both Left and Right are approximately 30°
Tilt: Both Up and Down are approximately 70°

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